ROAD MAINTENANCE AND ABANDONMENT PLAN (RMAP) GUIDANCE
FOR LANDOWNERS WITH LESS THAN 500 ACRES OF FORESTLAND IN A DNR REGION

Introduction

Research and experience indicate that surface erosion from roads and landslides produces over 90 percent of all harvest related sediment entering streams. State law now requires forest landowners to cover all their forest roads under an approved road maintenance and abandonment plan by July 1, 2006.

Landowners with less than 500 acres of forest land in a DNR region must submit with their forest practice application a road maintenance and abandonment plan (RMAP) covering the roads used by the application. Within one year of the date of submittal of the forest practices application or before July 1, 2006, whichever comes first, the landowner must submit a road maintenance and abandonment plan for the rest of their ownership in that region. Once the plan is approved, the landowner must attach or reference the approved road maintenance and abandonment plan when submitting subsequent applications. Priorities for road maintenance work within plans are:

- removing fish blockages
- preventing sediment delivery/mass wasting (landslides)
- preventing road surface runoff to typed waters
- preventing runoff and sediment delivery from stream adjacent roads to typed waters
- maintaining hydrologic connectivity
- with consideration for operational efficiency

A completed RMAP typically requires a 45-day review period.

The following are instructions to assist you in preparing the Road Maintenance and Abandonment Plan documents. (This attachment includes definitions of terms used and other informational diagrams)
Attached are two RMAP formats, a **Short Form** (page 5), and a **Long Form** (page 7-10), that require different responses, depending on issues that exist on your forest roads. ***Either format will require a DNR supplied map***. To request map(s), contact the Region office in which your property is located with your legal description(s).

Start with the **Short Form,** this form is intended for roads located on forest land that have little to no risk of causing damage to public resources.

- Review the definition of forest land and forest road, on the **Short Form**,
- Answer the questions in the box titled **Forest Road Related Issues,**
- If you answered **Yes** to any of the questions **Stop**, and go to the **Instructions for the Long Form (**page 2).
- If you answered **No** to all of the questions, fill in the remaining questions (acres, miles of road, miles of orphan road) on the short form.
- Draw your forest land on the DNR supplied map(s); show all forest roads on your ownership. The information on the map may or may not be accurate. It is your responsibility to update the map with the most current information on road, stream, and wetland location.
- In the **comments** section provide a brief description regarding the forest roads on your forest lands and how they will be maintained now and into the future.
- Sign your name and print your name on the lines provided and date the document.
- Return the **Short Form and work map** to the region office along with the completed **Forest Practices Application.**

Instructions for the Long Form:

Review the information on the **Forest Road Assessment Sheet** (page 6). The Forest Road Assessment Sheet provides descriptive information that will help you recognize road related issues that are of the highest priority.

DNR will supply two **Road Maintenance and Abandonment Plan work maps** (one is for your records and one is to be submitted with your RMAP). The map contains the following information:

- Section, Township, and Range
- All known forest roads and orphan roads
- All known streams, lakes, ponds (known as typed waters)
- All known Type A and B wetlands, adjacent to or crossed by roads
- A legend containing information about the symbols on the map(s)

The information on the maps may or may not be accurate. It is your responsibility to update the work map with the most current information on road, stream, and wetland location. The landowner is responsible to place additional information on the map such as,

- Forest land ownership
- Stream adjacent parallel roads
- Planned road abandonment
- The location of road improvements identified in **Form A** (page 7)

Any additional map symbols (use FPA legend) This is your work map to be included with your Road Maintenance and Abandonment Plan.

A resource map is also available to assist you in determining if you have unstable soils or are in a rain-on-snow zone.

All forest landowners are required to inventory their forest road system(s) to determine whether the road(s) are in compliance with the forest practices requirements.

FORM A, RMAP Assessment and Scheduling Worksheet (page 7)

To complete **Form A,** travel all your forest road location(s), take copies of **Form A,** the **map(s)** of your ownership and the **Forest Road Assessment Sheet** (page 6). Using **Form A** complete all the column information necessary for each **Road Segment or Point Feature** that currently exists on your forest road. Place the number assigned in **Form A** on the work map to indicate the location of necessary road improvements. Utilize this process on all forest roads located on your forest land.

You may use one copy per road or list all forest roads on one form. Extra copies need to be attached if necessary for additional roads.

Road Name/ID if your forest land contains more then one road, name or number each road.

Problem Area Number starting with number one (1), identify each segment or point that will need improvement work with a number. Place the same number on the work map, and circle it, at the location the work will be performed.

Length* refers to the length of road segment or a point feature that is being evaluated. The starting point for all roads would be 0 with a corresponding ending point for the road segment in feet or miles. Odometer readings in 1/10 mile are adequate for this.

Road Element Being Evaluated. Review the information and explanation regarding **Road Segments** and **Point Features** located at the bottom of **Form A**. Place the corresponding number for the **Road Segment (1-3)** or **Point Feature (4-9)** in this column.

Work Description or Assessment Comments. In this column briefly describe the current road condition and/or the type of repair needed. .

Month and Year When the Work is Planned to Begin and End. This column refers to the approximate time period repair work will be conducted during the 15-year road maintenance and abandonment planning cycle.

Year Work Completed. This column is used to report accomplishments. It will need to be filled in with the year projects are completed.

FORM B, Routine Maintenance Practices For Forest Roads (pages 8 - 9)

FORM B is a generic forest road plan. You may use this form or submit your own plan that covers all road maintenance practices and storm strategies that would be used.

Review and complete **Form B** for the road elements that exist on your forest roads. Place an **[X]** in each box that describes a maintenance practice you will use. The **Other Line** describes any practices that you will use to maintain your forest roads. Practices may stand alone, or be used in combinations with others.

All forest landowners are required to describe standard practices that will be used for routine maintenance as well as a storm maintenance strategy that includes pre-storm planning, emergency maintenance and a post-storm recovery plan.

FORM C, RMAP Summary Sheet (page 10)

Form C is a summary sheet for your road maintenance and abandonment plan. It will also assist the DNR road maintenance and abandonment specialist in reporting current road conditions and improvements accomplished in a current year. The Washington State Legislature requires an annual progress report to determine whether forest landowners are complying with the 1999 Forests and Fish Legislation.

Fill in the information on **Form C** as it applies to your forest road. If the information requested does not apply to your forest road insert **N/A** or **0** on the line.

SUBMITTING RMAPS

Mail **Forms A, B, and C, the Road Maintenance and Abandonment Plan Work Map (s)** showing your forest land and forest roads to the appropriate DNR Region office. Send the original to the DNR and maintain a photocopy for yourself. If you are unsure whether a Forest Practices Application is required for road maintenance work, contact the Region office in which your land is located.

Annual Reporting

Every year on or before the anniversary date of the plans submittal, landowners must report work accomplishments for the previous year and submit any necessary plan changes. Fill in the date of the work completed on **Form A** in the **Year Work Completed Column** and mail to the DNR Region office. Reporting is required only during the year when work scheduled on FORM A is completed. If projects are not completed as planned please reschedule for approval.

Landowners must report until all projects on Form A are completed. Routine maintenance is required on a regular basis before and after all improvements are made. The DNR review and approval of these reports will be conducted in consultation with the Department of Ecology, the Department of Fish and Wildlife, affected tribes, and interested parties.

References

Road Maintenance and Abandonment requirements as defined in WAC 222-24-052.
Reporting requirements may be found in WAC 222-24-051.
Class II, III, or IV activity as defined in WAC 222-16-050.
Definitions are located on pages 11-13 for your information and assistance.
Additional information about road maintenance and road maintenance planning is located in Section 3 of the Forest Board Manual.

ROAD MAINTENANCE PLAN SHORT FORM
FOR LANDOWNERS OWNING LESS THAN 500 ACRES OF FOREST LAND IN A DNR REGION

RMAP #: _____ Date Submitted: _____ WAU #: _____ _____
(For Department Use Only) _____ _____

Landowner Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____ Phone Number: _____

The following questions address all forest roads on your forest land ownership in the DNR _____ Region.

Note: "Forest land" means all land which is capable of supporting a merchantable stand of timber and is not actively being used for a use that is incompatible with timber growing. "Forest road" means ways, lanes, roads, or driveways on forest land used since 1974 for forest practices or forest management activities such as fire control. "Forest roads" does not include skid trails, highways, or county roads, except where the county is a forest landowner or operator.

FOREST ROAD RELATED ISSUES	YES/NO
Are any roads located within 200 feet horizontal distance of any *typed waters?	
Are any roads on or near areas with landslides or slope failures?	
Do your roads cross any *typed waters?	
Does road surface water flow directly into any *typed waters?	
Do you have persistent seeps or springs where water flows in the ditch line or on the road surface?	

* *(Examples of "typed waters" are: seasonal and year-round flowing streams, rivers, ponds, lakes, non-forested wetlands, or bodies of salt water)*

If you answered **Yes** to any of the above questions, you will need a more detailed road maintenance and abandonment plan. **STOP AND PROCEED TO LONG FORMS A, B, and C** (which are attached). As part of your Road Plan you will need to show locations of work to be done on maps. If you answered **No** to all of the above questions, describe in comments below how you plan to maintain your forest road(s) and sign at the bottom. If you have any questions about your planning requirements, contact _____ Region.

How many acres of Forest Land do you own in this DNR Region? _____ Acres
What is the total length of forest road on forest land you own within this region? _____ [ ] Miles or [ ] Feet
Total length of orphan roads – *(roads and railroad grades that have not been used since 1974)*: ___ [ ] Miles or [ ] Feet

Please show all forest roads and forest land owned in this region on maps provided by the Department.

COMMENTS: _____

_____

_____

_____

To the best of my knowledge, this proposal meets the road maintenance and abandonment planning requirements under WAC 222-24-050 and 222-24-051.

_____ _____ _____
Landowner/Representative Signature Print Name Date

SHORT FORM

Forest Road Assessment Sheet

The following road related issues are priority concerns that require review during the road assessment process. The statements below describe the major forest road issues and can help in identifying whether the issue exists or could exist on your road system.

FISH PASSAGE BARRIERS *(See definitions, page 11, for more information relating to fish passage barriers on Type 1, 2, or 3 Waters)*

Culverts or other structures that have a drop or fall from the outlet.
Multiple culverts at the same crossing.
Small diameter culverts that restrict flow and increase water velocity.
Culverts installed on a steep gradient.
Culverts without stream substrate (e.g. gravel) in them.

MASS WASTING (LANDSLIDES) FROM UNSTABLE AREAS THAT MAY DELIVER SEDIMENT TO TYPED WATERS OR THREATEN PUBLIC SAFETY

A road segment containing slides and earth movement or has a history of slides.
The road is cracked or settled, especially on the outside shoulder.
Landings are perched on steep side slopes above streams.
Stream crossing approaches where the ground suddenly increases in steepness.
Multiple springs and seeps in the cutslope.
Cracks in fill slopes.
Relief drainage water directed onto steep slopes.

SEDIMENT DELIVERY TO TYPED WATERS

Road ditches that drain directly into streams or wetlands.
Streams routed down road ditches before entering culverts.
Dirty road drainage water spilling over fills into streams or wetlands.
Seeps and springs that mix with dirty road ditch water.
Ditchlines are deeply eroded due to steep road gradient and few cross drains.
Water runs down wheel ruts not allowing water to get off of road surface.
Concave stream crossings where road is downhill to the crossing.

STREAM ADJACENT PARALLEL ROADS

Roads located within Riparian Management Zones (RMZ).
Roads where the toe of the fill is the stream bank.
Roads where floodwaters may reach the fillslope of the road.
Relief drainage water outlets directed into any streams or wetlands.
Areas where road surface waters spill off the roadbed into stream channels.

CULVERTS OR OTHER WATER CROSSING STRUCTURES ON NON-FISH HABITAT STREAMS

Small diameter culverts that restrict flow, causing washouts and scour during flood events.
Small diameter culverts that back up gravel bars on the upstream side of the culvert.
Steep fill slopes.
Unstable fills.
Structure is a box culvert or puncheon.
Drop on the outfall of the culvert causing fill erosion.
Damaged or blocked structures reducing flow capacity.

HYDROLOGIC CONNECTIVITY *(Water is routed out of its natural channel or flow pattern)*

Spring and seep waters located along road cut banks are routed down the ditch into a typed water or wetland.
Spring and seep waters that flow into the ditch are routed into a different drainage.

ORPHAN ROADS *(Roads not used since 1974 must be identified and assessed)*

An old road is upslope of a house, campground, county road or State highway.
Water running down the old grade to a stream or steep area.
Stream crossings especially where deep fills exist.
Box culverts, puncheons, old bridges, fords or washouts.

LONG FORM

FORM A

RMAP) Assessment and Scheduling Worksheet

Landowner Name:_____

For Department Use Only	DNR Issued RMAP ID: Watershed Administrative Unit (WAU):

Road Name/ID	Problem Area Number	Length*		Road Element Being Evaluated **	WORK DESCRIPTION OR Assessment Comments	Month and Year When Work is Planned to		Year Work Completed
		From	To			Begin	End	

*Starting with zero at the beginning of each road or where that road enters your forest land, measure your roads in miles or feet.

****Road Elements would include:**

Road Segments: 1 = Forest Road; 2 = Stream Adjacent Parallel Road; 3 = Orphan Road; or **Point Features:** 4 = Crossing of a Type 1, 2, or 3 Water; 5 = Type 4 or 5 Water or Wetland Crossing; 6 = Landing; 7 = Rock or Borrow Pit; 8 = Disposal site; 9 = Road Intersection.

*A **road segment** relates to one or more issues that can occur on a long segment of a road such as "Sediment Delivery". Common problems on a road segment can be grouped on the assessment form while each point feature needs to be described individually. **Point features**, such as " Type 4 or 5 Water Crossing" as described above refers to an occurrence of a problem at a given point on a road.*

LONG FORM (Form A) Page _____ of __

Routine Maintenance Practices For Forest Roads

Forest Roads – General Maintenance Practices *(Check all the practices the landowner will use)*

Cut and Fill Slopes

- ☐ Slides from the ditches and roadway will be removed. Overhanging material from the cut and fill slopes will be removed to restore the natural angle of repose.
- ☐ Areas with potential to deliver debris to any Typed water will be stabilized by fill pullback, weight placed at toe of slope, compaction, abandonment, and/or other measures as appropriate.
- ☐ Undesirable slide materials and debris will not be mixed into the surface material.
- ☐ Exposed cut and fill slopes will be seeded with erosion resistant vegetation.
- ☐ Buffers such as slash windrows, silt fences, or riprap will be placed along stream adjacent roads where there is potential for surface erosion sediment delivery to Typed waters.
- ☐ Other _____

Road Surface

(Note: In maintaining stream-adjacent parallel forest roads, down wood that is blocking vehicle passage must be placed on the side of the road closest to the adjacent water.)

- ☐ The road surface, turnouts, and shoulders will be graded and shaped as needed to provide a suitable travel surface and control water runoff in an even, dispersed manner. Grading may be substituted with a lift of surface rock.
- ☐ Waste material from slides or other sources will not be deposited in streams or at locations where it can erode into Typed waters.
- ☐ Grading will not undercut the back slope of the bottom of the ditchline.
- ☐ Desirable surface material will not be bladed off the roadway.
- ☐ Surface material lost or worn away will be replaced.
- ☐ Outside berms will be removed except those needed to protect sensitive slopes and fills.
- ☐ Other _____

Drainage: Ditched Roads

- ☐ Ditches and drainage channels at inlets and outlets of culverts will be kept clear of obstructions and functioning as intended.
- ☐ Culverts will be inspected and cleaned routinely and immediately after any significant storm events regardless of harvest activity.
- ☐ Where a relief culvert outfall drains onto unprotected erodible material, a rock apron, flume, down spout, and/or rock energy dissipater will be installed to prevent erosion below the outfall.
- ☐ Silt bearing surface runoff will be prevented from entering Typed waters. This will be achieved by adding relief culverts, clean hard rock, ditch filters, or silt ponds. Drainage structures will be inspected and cleaned routinely as needed.
- ☐ Existing relief culverts in good shape and functionally adequate but not meeting current minimum diameter requirements may remain until worn out. When the relief culvert is replaced, it will be upgraded to at least the 18-inch western Washington or 15-inch eastern Washington diameter standard.
- ☐ Other _____

LONG FORM **FORM B**

Routine Maintenance Practices For Forest Roads

Drainage: Out-sloped Roads

- ☐ A 3% outslope will be maintained where appropriate.
- ☐ Drivable dips will be installed in the road subgrade as necessary to control surface runoff.
- ☐ Waterbars may be installed as necessary when the road is not in use.
- ☐ Other _____

Relief Culvert Installation

- ☐ All new installations on road grades in excess of 3% will be skewed at least 30 degrees from perpendicular to the road centerline.
- ☐ Relief culverts will be installed using a slope steeper than the incoming ditch, but not less than 3%.
- ☐ Rock armored headwalls at culvert inlets will be constructed and maintained to the road shoulder level with material that will resist erosion.
- ☐ Relief culverts will be placed so that ditch water is routed to the forest floor in a stable location and energy dissipaters will be added as needed to prevent erosion.
- ☐ Energy dissipaters and sediment traps will be placed at the out slope or downspout end to prevent erosion or trap suspended sediment.
- ☐ Other _____

Seeps and Springs

- ☐ All seasonal and year round springs entering the road ditch line will be cross drained through the roadbed within 50 feet of where it enters the ditch line.
- ☐ Other _____

Non-Fish Habitat Stream Crossings

- ☐ New or replacement stream crossing installations will be sized, and the fill protected, to accommodate a 100-year flood. Rock armor headwall culvert inlets will be installed where the stream gradient above the crossing is greater than 6 %.
- ☐ Existing stream crossings will be inspected for scour, sediment delivery, outfall, and flow adequacy. If the structure is functioning with little risk to public resources it will be maintained until the end of its functional life. For culverts not being replaced, maintenance will include culvert inlet and outlet cleanout, culvert repairs, fill erosion control, and other work as needed.
  Note: For work proposed over the bankfull width of non-fish habitat streams, a Hydraulic Project Approval may be needed from the Washington Department of Fish and Wildlife.
- ☐ Other _____

Streams, Fish Habitat

- ☐ In addition to requirements for non-fish habitat stream crossings, fish passage for adult and juvenile fish will be maintained. New stream crossings will be designed and installed to ensure fish passage.
- ☐ For work proposed over the bankfull width of fish bearing streams or Type A or B Wetlands, a Hydraulic Project Approval will be obtained from the Washington Department of Fish and Wildlife.
- ☐ Other _____

LONG FORM **FORM B**

Routine Maintenance Practices For Forest Roads

Bridges

- ☐ Exposed bridge fills next to streams will be armored or riprapped to prevent erosion.
- ☐ Bridge approaches will be maintained to be level with the bridge deck with crushed rock or pavement.
- ☐ One end of each new or reconstructed permanent log or wood bridge shall be tied or firmly anchored if any of the bridge structure is within 10 vertical feet of the 100-year flood level.
- ☐ Bridges will have curbs or splashguards installed.
- ☐ All bridge decks will be sealed to prevent road water and mud from dropping through to streams.
- ☐ Other _____

Fords

- ☐ Fords that are not functional will be abandoned, rock armored, paved, or replaced with a culvert or bridge as necessary.

(Check with Washington Department of Fish and Wildlife to see if a Hydraulics Project Approval is required)

- ☐ Other _____

Storm Maintenance Plan ***(Check all the practices the landowner will use)***

Pre-storm Planning

- ☐ Relief culverts will be inspected and cleaned as necessary prior to October 1 of any given year.
- ☐ Water bars that are installed will be re-established prior to October 1 of any given year.
- ☐ Silt fences and settling ponds will be inspected and cleaned prior to October 1 of any given year.
- ☐ Waste areas will be placed in locations that are known to be stable and that have no potential to deliver sediment to typed waters or cause landslides.
- ☐ When storm related maintenance issues are discovered, the landowner will be responsible for follow-up.
- ☐ Other _____

Storm Event Emergency Maintenance Strategy

- ☐ All roads within the system will be patrolled within 72 hours of a major storm event.
- ☐ Damage will be assessed then repaired or stabilized by a priority determined by the damage or potential to damage a public resource.
- ☐ Appropriate maintenance or repair actions will be taken based on these observations and the affected agencies will be contacted (e.g., DNR, DOE, WDFW, County).
- ☐ Other _____

Post Storm Recovery

- ☐ Repair follow-up will be prioritized with fish bearing streams a number one priority.
- ☐ Drainage structures that fail will be replaced with adequate sized structures designed to handle a 100-year flood event.
- ☐ Waste areas will be compacted then reseeded before the next winter season.
- ☐ Cutbank failures that have potential to deliver sediment to a Typed water will be vegetated as soon as possible.
- ☐ Emergency repair work done will be addressed in a RMAP annual report.
- ☐ Other _____

LONG FORM

FORM C

(RMAP) Summary Sheet

"Road Maintenance and Abandonment Plan"

Landowner Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____ Phone Number: _____

Contact Person *(If Different from Above)*

Name: _____ Employed By: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____ Phone Number: _____

Condition of Roads Covered In This RMAP

Forest land ownership in Region: _____ Acres

Total length of your **forest road(s)** in this region: _____ mi. or ft.

Total length of stream adjacent parallel road(s): _____ mi. or ft.

Length of orphan road segments posing a threat to public safety or public resources: _____ mi. or ft.

Total length of orphan roads – (*roads and railroad grades that have not been used since 1974)*: _____ mi. or ft.

Total length of road(s) needing work: _____ mi. or ft.

Number of stream crossing structures – *(culverts, bridges, fords, etc.)*: _____

Number of road related fish passage barriers at stream crossings: _____

Approximate stream length of fish use currently blocked on your property: _____ mi. or ft.

(Estimate from water type maps and/or from physical criteria)

Work Proposed In This RMAP

Forest road to be abandoned: _____ mi. or ft.

Orphan road to be abandoned: _____ mi. or ft. *(Any work relating to orphan roads is voluntary)*

Fish passage barriers to be removed/replaced: _____;

COMMENTS: _____

_____

_____

_____

_____

_____

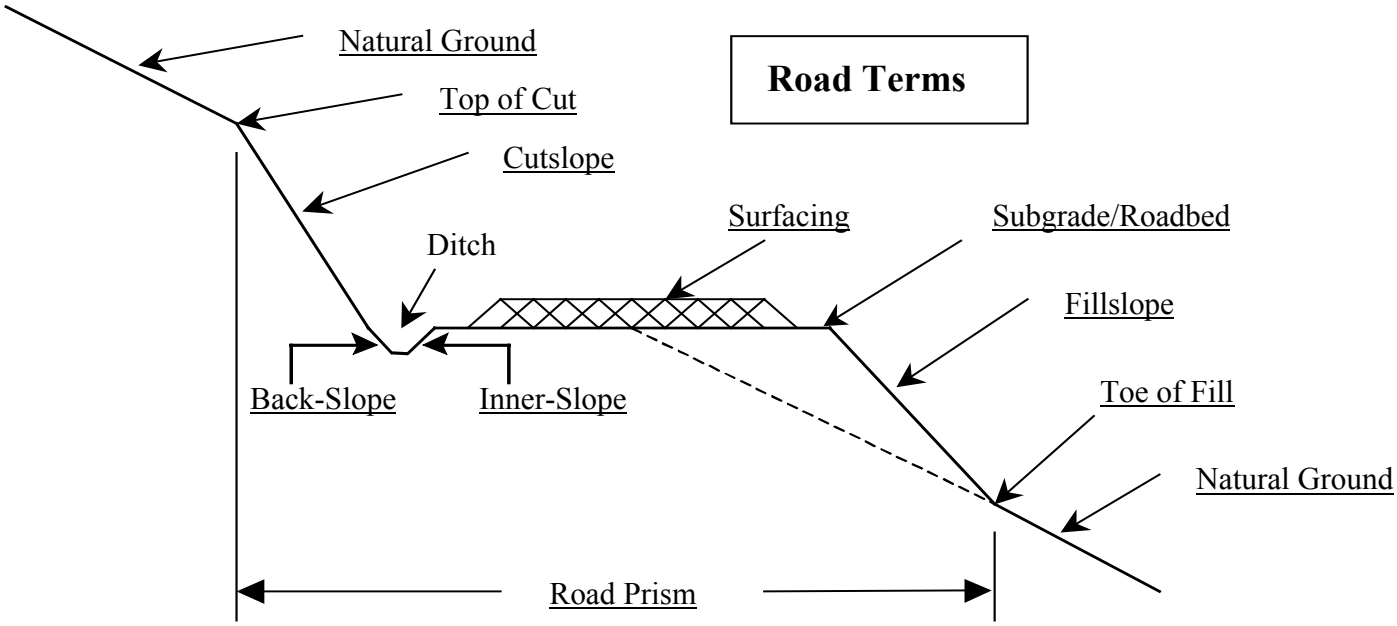
This document represents the general maintenance strategies that will be followed relating to forest practice roads under my ownership.

I understand that this proposal is subject to current rules and regulations of the forest practices act, as well as any applicable Federal, State, or Local rules and regulations.

Landowner /Representative Signature: _____ Date: _____

Printed Name: _____

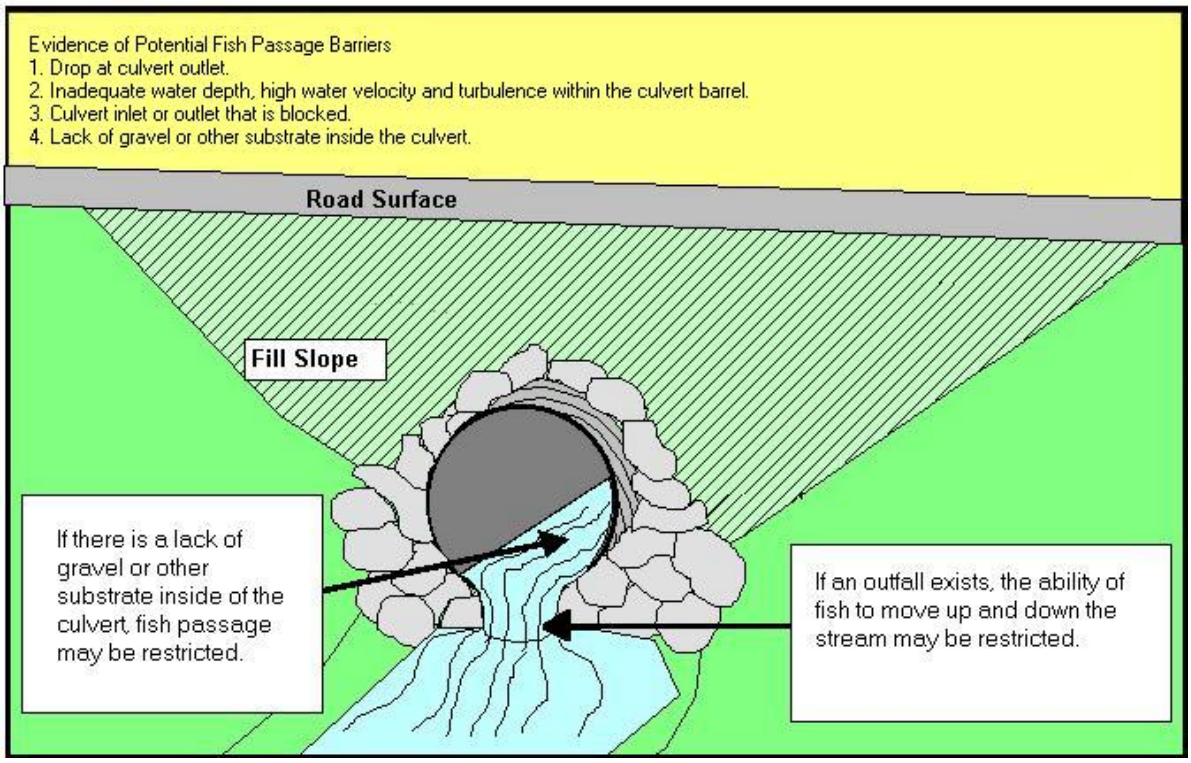
FOR DEPARTMENT USE ONLY					
Acceptance Date:		Approval Date:		RMAP Number:	
WAU Number(s):					



Definitions Relating to Road Maintenance and Abandonment Plans

"Drainage Structure" means a construction technique or feature that is built to relieve surface runoff and/or intercepted ground water from roadside ditches to prevent excessive buildup in water volume and velocity. A drainage structure is not intended to carry any typed water. Drainage structures include structures such as cross drains, relief culverts, ditch diversions, water bars or other structures demonstrated to be equally effective.

"Fish Passage Barrier" means any water crossing structure on a fish habitat water body that prevents fish at all life stages from moving up or down stream through the structure. The following diagram summarizes some of the common things to look for when evaluating a water crossing structure for fish passage.



"Forest land" means all land, which is capable of supporting a merchantable stand of timber, and is not being actively used for a use, which is incompatible with timber growing.

"Forest Land Owner" shall mean any person in actual control of forest land, whether such control is based either on legal or equitable title, or on any other interest entitling the holder to sell or otherwise dispose of any or all of the timber on such land in any manner.

"Forest road" means private ways, lanes, roads, or driveways on forest land used since 1974 for forest practices or forest management activities such as fire control. "Forest roads" does not include skid trails, highways, or county roads except where the county is a forest landowner or operator.

"Maintaining Hydrologic Connectivity" means to maintain the natural course of surface water drainage and ground water connections, including those relating to Typed Waters and naturally connected wetlands.

"Orphan Road" is a road or railroad grade that the forest landowner has not used for forest practices activities since 1974.

"Public Resources" means water, fish, and wildlife and in addition shall mean capital improvements of the state or its political subdivisions. (Examples: Fish hatcheries and Public highways).

"Road Abandonment" means all activities that result in the stabilization of roads to a more natural state of self-maintenance. A road is considered to be abandoned once the department has determined that the conditions shown below have been met:

(a) Roads are outsloped, water barred, or otherwise left in a condition suitable to control erosion and maintain water movement within wetlands and natural drainages;
(b) Ditches are left in a suitable condition to reduce erosion;
(c) The road is blocked so that four-wheel highway vehicles cannot pass the point of closure at the time of abandonment;
(d) Water crossing structures and fills on all typed waters are removed, except where the department determines other measures would provide adequate protection to public resources.

"Road Maintenance" means any road work specifically related to maintaining water control or road safety and visibility (such as; grading, spot rocking, resurfacing, roadside vegetation control, water barring, ditch clean out, replacing or installing relief culverts, cleaning culvert inlets and outlets) on existing forest roads.

"Stream Adjacent Parallel Road" means roads (including associated right-of-way clearing) in a riparian management zone on a property that have an alignment that is parallel to the general alignment of the stream, including roads used by others under easements or cooperative road agreements. Also included are stream crossings where the alignment of the road continues to parallel the stream for more than 250 feet on either side of the stream. Not included are federal, state, county or municipal roads that are not subject to forest practices rules, or roads of another adjacent landowner.

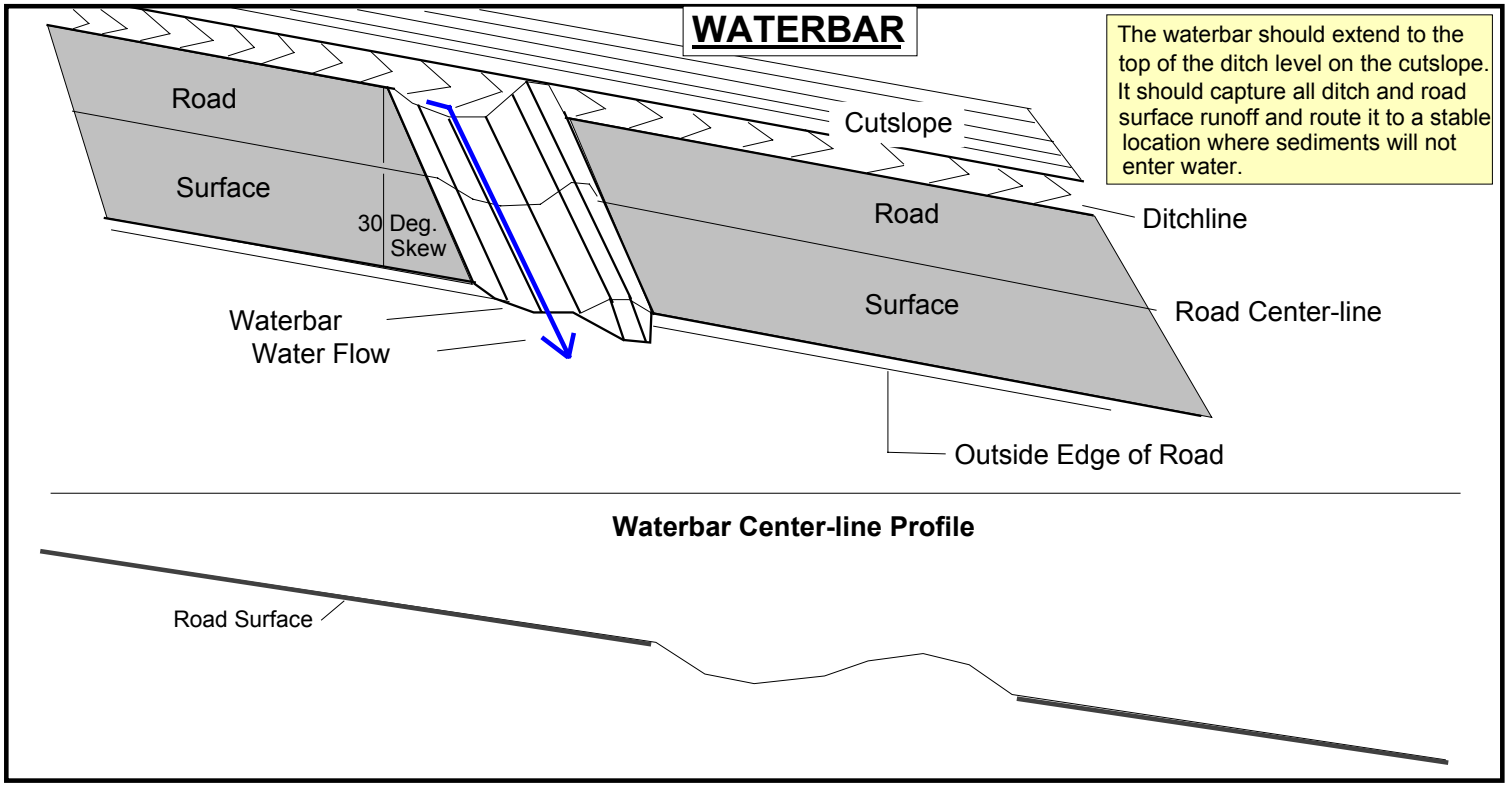
"Threaten Public Safety" means to increase the risk to the public at large from snow avalanches, identified in consultation with the department of transportation or a local government, or landslides or debris torrents caused or triggered by forest practices.

"Typed Water" means seasonal and year-round flowing streams, rivers, ponds, lakes, non-forested wetlands, or bodies of salt water.

"Wetland" means any area with soils that evolved during water-soaked conditions and with plants that can tolerate water-soaked soils such as swamps, bogs, fens, and similar areas.

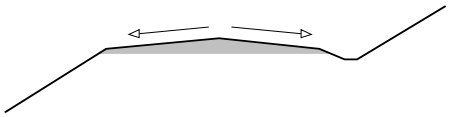
"Water Crossing" is a structure such as culverts, fords, or bridges connecting road segments in or over water.

Other Informational Diagrams



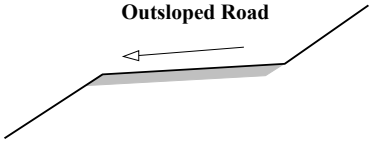
ROAD SURFACE DRAINAGE DESIGNS

Crowned Road



The high point of the road surface on a crowned road is near the center of the road. Water drains off the road in both directions. Ditches are required in areas where there are cut banks.

Outsloped Road



On an outsloped road, all water runs to the outside of the road surface. These roads need to be maintained in a fashion that prevents rutting. This is a good design for seasonal use roads. Were the road segments are outsloped at 3-percent, ditches may not needed.
(A 3-percent outslope equates to about a 4-inch drop per 11-feet of road surface width)
Waterbars may be needed to help route water off the road.

Insloped Roads

In areas where there are highly erodible and/or unstable steep slopes, roads can be inslpoed for short streches to keep surface runoff off sensitive slopes. On these segments water is directed to the ditchline.